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NOTE BY THE SECRETARY-GENERAL

The Secretary-General has the honour to transmit to the members of the Security Council the attached communication, which he has received from the Acting Director General of the International Atomic Energy Agency (IAEA).

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Annex

Letter dated 17 August 1993 from the Acting Director General of the International Atomic Energy Agency addressed to the Secretary-General

Please find attached the consolidated twentieth and twenty-first International Atomic Energy Agency (IAEA) inspection report in Iraq under Secretary-General resolution 687 (1991). You may deem it appropriate to transmit the report to the members of the Security Council. The Director General remains, of course, available with Chief Inspectors, Robert Kelley (IAEA-20) and Maurizio Zifferero (IAEA-21), for consultations you or the Council may wish to have.

(Signed) Sueo MACHI
Acting Director General

Appendix

Consolidated report on the twentieth (25-30 June 1993) and twenty-first (24-27 July 1993) IAEA on-site inspections in Iraq under Security Council resolution 687 (1991)

SALIENT POINTS

- Both teams observed Iraqi preparations for the removal of the irradiated fuel. Civil engineering preparations are well underway and appear to be adequately designed. New access roads and pads are complete. An 80-ton mobile crane is now available for lifting casks. The crane was tested in place and potential clearance problems were identified to be corrected. Support equipment is being located and collected. The team surveyed the route to the airport and did not observe any restrictions that would cause transport problems. The status of the irradiated fuel stored at location B was evaluated and the fuel storage remains safe despite the primitive conditions. Water was added to the tanks to compensate for evaporation.

- The IAEA had independent information about machine tool deliveries to Iraq which led to an inspection of a conventional munitions plant. Fifty machines matching procurement data were found. Analysis is required to see if these machines are covered by dual-use criteria.

- IAEA 21 visited an industrial complex south of Tajl for the first time. This complex comprised of at least five separate facilities, including a fiberglass plant a fiber composite manufacturing building, a resin plant, and a new materials science center that had not been inspected previously. None of the plants have a uniquely nuclear function, but several produce dual-use materials. It is important that activities and future production at these facilities be monitored.

- Iraq is proceeding with plans to build new non-nuclear facilities at several former nuclear sites. The nuclear related capabilities at these sites have been destroyed, but infrastructure such as roads, utilities and offices remain. The teams assessed construction and planning activities at four sites, Al Jazira, Al Sharqat, Al Tarmiya, and Al Furat. The new activities bear no relationship to the former nuclear work.

- Preparations for installing surveillance cameras at machining facilities continued. A specialist on the IAEA-21 team made specific measurements and surveys checked to be sure that the necessary utilities are available for the installation of surveillance test units at Um Al Marik.

- Inspectors visited other sites on routine dual-use equipment inventorying and monitoring tasks. The team was successful in locating additional pieces of equipment that had been identified in the Iraqi Annex 3 declaration. A number of pieces of equipment identified from supplier data were also located and catalogued.

- Preparations for consolidating HMX explosives in a single sealed location were started. Progress on this task has been slow due to low interest on the part of the Iraqi side.

- Some activities planned for IAEA-20 were inhibited by military operations in Baghdad on 28 June 1993. However, these activities were incorporated in IAEA-21 and, overall, all inspection goals were met.

- The Iraqi side has still not provided any new information on suppliers. IAEA-20 renewed the request to break the impasse on this point and provided a number of specific questions. During IAEA-21, the Minister of Higher Education and Scientific Research, Mr. Ghaffour, stated that the Iraqi side will answer these questions during the "technical talks" proposed for New York in September. The update of the Annex 3 declaration promised by the Iraqi side for July has not been received.

- IAEA 21 visited the Al Kindi small missile development center. This Center has capabilities that are unique in Iraq for research with pyrotechnic materials. The large scale movement of equipment for safekeeping during times of political tension seen during previous missions (e.g. IAEA-17) was again observed during IAEA-20 and IAEA-21 (e.g., Al Kindi, Al Nida, Um Al Maarik).

INTRODUCTION

1. This report summarizes the results of the twentieth and twenty-first inspection missions carried out in Iraq by the IAEA under the United Nations Security Council resolution 687 [1991], with the assistance and cooperation of the Special Commission of the United Nations. The twentieth mission took place from 25 to 30 June 1993 and was headed by Mr. Robert Kelley of the IAEA as Chief Inspector. The team consisted of 10 inspectors (comprising 7 nationalities) and support staff. The twenty-first mission took place from 24 to 27 July with Mr. Maurizio Zifferero of the IAEA as Chief Inspector. This team consisted of 16 inspectors (comprising 12 nationalities) and support staff.

2. The program of these missions included:

   - two no-notice inspections of newly designated sites
   - activities related to equipment and materials;
   - a number of inspections of a monitoring nature at previously visited sites;
   - activities related to the planned removal of irradiated research reactor fuels stored at Tuwaitha and Garf Al Naddaf (location B);
   - a round of discussions with the Iraqi authorities to clarify some aspects of their past nuclear program.
   - Discussions with senior Iraqi officials about their failure to provide supplier-related procurement information.

3. The inspection objectives were met. Inspection activities were carried out at 10 sites listed in Table 1 and at the 21 sites listed in Table 2.

TABLE 1

Sites Visited on the 20th Inspection

1. Al Tuwaitha Nuclear Research Center
2. Al Tuwaitha - Al Nafad equipment storage area
3. Al Tuwaitha - Al Shaykili warehouses
4. Al Rabiyah Factory (now Al Nida)
5. Garf Al Naddaf (location B) irradiated fuel storage
6. Nahrawan conventional ordnance plant
7. Al Furat project site
8. Badr State Establishment tungsten carbide plant
9. Al Mahmoudiya bicycle plant
10. Muthanna Establishment explosives storage bunkers

TABLE 2

Sites Visited on the 21st Inspection

1. Garf Al Naddaf (location B) irradiated fuel storage
2. Al Tuwaitha Nuclear Research Center
3. AlTuwaitha - Al Shaykili warehouses
4. Al Tuwaitha - Al Hamath workshop
5. Al Furat project site
6. Badr State Establishment
7. Taji - Nassr State Establishment
8. Taji - Resin Plant
9. Taji - E Glass Plant
10. Taji - Plastic Injection Molding Plant
11. Taji - Petrochemical Facility (under construction)
12. Taji - Center for Metallurgical Industries
13. Taji - Filament Winding Facility
14. Al Jazira Feed Materials Plant
15. Al Kindi Missile Development Center
16. Al Tarmiya Uranium Enrichment Facility
17. Al Rabiyah Factory (now Al Nida)
18. Dijla Electronics Factory (now Al Zaura)
19. Al Qa Qaa State Establishment
20. Ash Sharqat Uranium Enrichment Facility
21. Auqba bin Nafi (now Um Al Marik)

ACTIVITIES RELATED TO EQUIPMENT AND MATERIALS

4. HMX. 255 tons of high explosive (HE) of the HMX type are stored under IAEA seal in six bunkers at the Al Qa Qaa site. As a typical dual-use material, HMX is listed in Annex 3 of the long-term monitoring plan under UNSC resolution 715. The present distributed storage conditions of HMX at Al Qa Qaa are inconvenient for monitoring and cause some safety concerns. The IAEA has requested that the Iraqi side consolidate the HMX in a safer and more convenient place to facilitate sealing and regular monitoring. The IAEA-20 team evaluated two large bunkers in the Muthanna complex. The Iraqi side proposes them as an alternative storage location. With minor modifications to improve security, these bunkers represent a real improvement over the current storage conditions at Al Qa Qaa. The transfer of the explosive will take place during a future inspection when the modifications have been verified. The necessary modifications were not complete when IAEA-21 left Iraq.

5. Nahrawan. Information obtained by the IAEA, independent of any declaration by the Iraqi side, indicated a large shipment of computer numerically controlled (CNC) machine tools to Iraq in the late eighties. The IAEA is inventorying all such machines existing in Iraq to determine if they belong to categories that are subject to long-term monitoring. A portion of the information received concerned the shipment of 50 CNC machine tools (Matrix Churchill) to the Nahrawan munitions plant south of Baghdad. When confronted with this information the Iraqi side, while contending that this equipment does not meet the specifications that require it to be declared under Annex 3, took the inspection team to the site. The Nahrawan munitions plant is located approximately 20 km east of downtown Baghdad. It was badly damaged during the war and is now rebuilt. No explosives are handled there, only shell cases and fuses. The plant has its own foundry, hot forge, machining and assembling facilities. The inspection focused on the finishing machine shop at the west end of the plant. The team identified the 50 CNC turning machines, 14 of which were badly damaged (scrapped or used for spare parts). Serial numbers of machines and control units were taken. Machine tool experts will determine whether they fall in the dual use category.

6. Capacitors. The Iraqi side has declared a large number of capacitors under the reporting requirements of Annex 3. Unlike the case of machine tools, they have chosen to report all capacitors they can find even when they agree that the items clearly do not meet the requirements of the annex.

7. High voltage Power Supplies (HVPS). Five HVPS units (Universal Voltronics) had been verified by the fifteenth inspection team in the scrap yard of Al Nafad. They had been used as power supplies in the electromagnetic isotope separation (EMIS) program. The nineteenth inspection team noted that major elements, probably high voltage electronic switches, from each HVPS had been removed in the interval between IAEA-15 [8-18 November 1992] and IAEA-19 [30 April - 7 May 1993]. A query to the Iraqi side yielded a statement that electronic switches had been salvaged and had been installed in welding equipment at the "Bicycle and Tubes Plant" in Mahmoudiya. The twentieth inspection team went to this plant and was able to identify all five high voltage electronic tubes removed from the HVPS at Al Nafad. The tubes supply power to 4 welding machines that turn strip steel into welded seamed steel pipes. The pipe is used to make bicycles. These tubes have a limited life time and one of them had already failed. The Iraqi side was requested to collect the tubes as they fail and to present them to the IAEA for final verification and disposal. In addition to the already inventoried five HVPS units, a sixth smaller unit by the same manufacturer was identified at Al Nafad by the twentieth team.

8. Al Shaykili. The request to consolidate in Al Shaykili, all spare parts and components salvaged from the Tammuz-1, Tammuz-2 and IRT-5000 reactors, has not yet been fully satisfied. The consolidation of previously taken inventories and the check against supplier records will be completed once the move has been made.

9. At Al Nida (formerly Al Rabiyah). The inspection at Al Nida was carried out to collect additional information on three specific pieces of equipment - an electron beam welder, a plasma spray system and an annealing furnace. The requested information was collected. With the exception of this equipment, the plant at Al Nida was largely empty. All machine shop bays visited were empty, wall to wall. A few pieces of equipment were outside along with shelves and stacks of material. The team was told that the high level of political tension, resulting from the refusal of the Iraqi authorities to accept the installation of UNSCOM surveillance equipment at two missile test sites, had prompted the management of the plant to move the equipment for safekeeping.

10. IAEA-21 made a no-notice inspection of a suspected equipment dispersal site near Al Nida. A number of machines, including one under IAEA seal from Al Nida, were located. The Iraqi side is in the process of returning these machines to their home sites now that tensions have eased.

ACTIVITIES RELATED TO THE REMOVAL FROM IRAQ OF IRRADIATED RESEARCH REACTOR FUEL ASSEMBLIES

11. Summer heat had caused the water level to decrease in the tanks where irradiated research reactor fuel assemblies are stored at location B. The team supervised a refilling of the tanks with demineralized water and took samples.

12. Meetings were held with the Iraqi counterparts to discuss their preparation status for the Iraq fuel shipment. A significant amount of work has been completed at the IRT reactor facility and they have initiated the work at location B. The cask decontamination pad, cask loading pad, and concrete pad for the mobile crane have been installed at the IRT reactor facility. In addition, the necessary power supplies, air compressor and area lighting have been installed. They have also modified their fire engine tanker (for normal water and a second water tanker for deionized water) to supply water at the desired pressure. The road between the reactor and the cooling tower has been rebuilt. They are preparing the scaffolding for the decontamination pad. At the suggestion of the Iraqi engineers, the approach for the handling of the fuel at IRT facility has been changed. Due to the large amount of debris in the pools at this facility, it was agreed to use a separate cleaning pool rather than trying to clean the fuel assemblies in the reactor pool. This will add a few steps to the loading operation but will minimize the loss of time due to water clarity problems. This approach will be similar to that planned for location B. IAEA-21 located helium stored at Al Shaykli that can be used for purging the shipping casks.

13. The general plans and the details associated with each concrete structure to be used at location B (Garf Al Naddaf) were reviewed, including detailed drawings of the concrete pads, concrete lid adapters and the concrete cleaning station. Two approaches have been developed for the concrete tank adapter and a test will be done to choose the best one. The concrete cleaning station will only be partially installed in the ground due to the high water table. All of the required roads to access the concrete tanks within location B have been graded and the gravel bed foundation for the roads installed. They plan to cover the gravel bed foundations with asphalt. These roads are about 5 to 10 meters wide and are designed to support the loads required to handle the equipment planned for the fuel removal operations. They are in the process of installing the necessary area lighting for this facility. The cask loading area located in the center of the facility is being prepared

and will contain the cask loading pad, cask decontamination pad, crane support pad and the concrete cleaning station. Four additional office modules have been moved to Location B and are being renovated. A separate brick building about 10 meters in length and 3 meters wide is being built near the office modules. The modifications are expected to be complete by the end of July 1993.

14. A detailed survey of the transport route from Tuwaitha and location B to the Habbaniya airport was carried out by the team and no clearance, weight, or other difficulties were identified.

15. Minutes before the departure of IAEA-20 from Iraq, the Iraqi authorities displayed an 80-ton mobile crane, with a 40 meter boom, of the type envisaged to handle the shipping casks for the irradiated fuel transport. The proposed crane appears adequate for the lifting operations. An extensive list of spare parts for this crane was provided by the Iraqi side. The crane was moved into location for a test lift during IAEA-21 and interference with the adjacent building was found. The wall of the building will be demolished to make more space.

16. The spent fuel expert reviewed plans, drawings and procedures for the forthcoming irradiated reactor fuel removal operation. He also inspected construction activity and equipment acquired for use in the fuel transfer. One important task was the advance planning necessary to integrate all of the functions supplied from outside Iraq with those to be carried out by the Iraqi side.

ACTIVITIES RELATED TO FACILITIES

17. IAEA-21 made a no-notice inspection of an Industrial Complex south of the Nassr General Establishment near Taji. This complex consists of a number of modern plants and buildings. Some portions are still under construction or as yet, unoccupied. The facilities were suspected of producing dual-use materials. IAEA-21 did not observe any prohibited activities, but the facilities have good capabilities to produce materials that will need to be monitored. Activities declared by the Iraqi side and verified by the inspection team included:

    A plant to produce fiberglass and products made from fiberglass. The plant was developed as a turnkey operation built by a foreign company. The plant is approximately 95% complete but missing items (bushings) in the melter section prevents its operation. Once the items are available the production of glass will be limited to E-glass fiber. The component manufacturing process has run on purchased fibers.

- A building near the Glass Plant includes a fiber composite winding machine for producing pipes and tanks. The diameters may vary from 50 to 240 cm with thicknesses from .3 to 2.5 cm. The production is crude by nuclear and missile technology standards.

- A resins plant, again built as a turnkey operation by a foreign firm, to produce a number of different kinds of resins. This plant is partially operational and supplies the fiberglass plant with resinous materials.

- An unfinished petrochemical plant that will study fuel additives when it is completed.

- Another unfinished separate plant in the complex was declared to be an plastics injection molding facility. The status of construction is such that this could not be verified. All four of these plants are under the management of Petrochemical Project number 2 (PC-2).

- A new and capable Center for Metallurgical Industries. This facility is said to be studying industrial problems in materials science, such as copper production, lead purification, refractory compounds, etc. The Center is just being completed and equipment is still being installed. The activities of this facility will need to be monitored.

- The Iraqi side has been asked to provide documentation for the declared functions of the new facilities. Their verbal declaration maintains that they are civil facilities with no classified functions.

18. Short visits were carried out at the Al Furat project site, at the Badr tungsten carbide tooling bits plant, at Al Nida (formerly Al Rabiyah) plant, at Al Shargat, Al Jazira, and Al Qa Qaa.

19. At the Al Furat project site , both teams reviewed renovation activities first reported by the nineteenth team. Buildings that are being remodeled include dormitories, offices, a canteen and the original training center building. The two main buildings being constructed for centrifuge manufacturing remain in the same unfinished condition as when they were first seen in July 1991. The Iraqi side has been notified that these two buildings cannot be altered in any way without a detailed

plan approved by the IAEA. The Iraqi side has been further instructed to submit a verifiable electrical power schedule to the IAEA. This will be used to substantiate their claim that the site will be no more than a light research laboratory for defense related activities, subject to IAEA inspections. There is still no equipment at this site but the Iraqi side indicates that the renovation and equipment installation work will be completed in two months and, when finished, that the site will house 500 people.

20. The Badr Tungsten Carbide Plant had been inspected by the nineteenth inspection team at the beginning of May. There are two distinct and separate facilities in Iraq related to tungsten carbide. A plant within the Badr General establishment was built by an American corporation. It manufactures normal machine tool cutting inserts at the rate of about 10 tons per year. Another building termed the "tungsten carbide powder manufacturing building", existed at the Al Atheer plant. It was destroyed by the Iraqis in 1992 under IAEA supervision. It was a nearly completed building but with no installed equipment. The Iraqi side have stated that it was indigenously designed and constructed. IAEA-20 visited the Badr Plant to compare it with drawings of the American plant. It is clear that the American drawings are of Badr and not Al Atheer. IAEA-21 visited the Um al Marik facility (formerly Auqba bin Nafi). Um al Marik is a distinct group of buildings at Badr. Most of the equipment had been removed because of the political tensions. Of particular interest, is that the very large vertical boring mills used to make EMIS pole pieces had been removed. These machines have a scale of many meters and weigh tens of tons. This is indicative of the Iraqi side's efforts to protect their industrial base.

21. IAEA-21 visited Tarmiya to examine the progress of a new chemical plant on the old enrichment site. The chemical project has been reported on before and is unremarkable. However, in the course of the inspection the team discovered that water cooling towers had been removed from the site. This equipment, while general purpose in nature, had been utilized in the electromagnetic separation process and had not been released in spite of a specific request from the Iraqi side. The Iraqi side had relocated the cooling towers to two sites, the former Ash Shargat enrichment site and the Al Qa Qaa explosives plant. IAEA-21 visited both these sites, located the towers, and verified them as being the ones from Tarmiya. The Iraqi side has been notified that movement of these towers had not been authorized. They have been directed to move them back to Tarmiya or, alternatively, to destroy them.

22. The former nuclear site at Al Jazira is being cleaned up and decontaminated according to a joint plan (see inspection report for IAEA-15). The new iron oxide pilot facility is progressing rapidly. Regrettably, the Iraqi side has failed to provide documentation for the new plant in detail sufficient to verify its function. The authority to demand such documents comes from several places, particularly Annex 2 of the long-term monitoring plan. The Iraqi side had promised to provide documents but have failed to do so. In the case of Al Jazira, the documents exist and have been seen briefly by inspection teams in the field. The IAEA has requested copies of the documents and has given the Iraqi side ample time to provide them. The IAEA has ordered Iraq to stop further construction activity at Al Jazira until the documents are provided. This order to stop new activities will be extended if cooperation does not improve. The responsibility for such delays rests squarely with the Iraqi side who have pressed on with major projects and have ignored simple and reasonable reporting requirements. The Iraqi side holds the key to restarting these activities.

OTHER ACTIVITIES

23. The twentieth inspection team reiterated the need for full cooperation on the issue of supplier data, and challenged the Iraqi side to release supplier information on a specific program as a confidence building gesture. The Action Team followed up from Vienna with a new list of outstanding questions. The Minister of Higher Education and Scientific Research, Mr. Ghaffour, told IAEA-21 that he was not prepared to hand over any information to the team. He did, however, promise to provide the information that has been requested at the "technical talks" currently scheduled for September in New York. Previous pledges to provide supplier information have not been fulfilled nor has the promised update of Annex 3 been delivered.

24. Milestones and decision points of the Iraqi feasibility studies for protected underground facilities and the project to acquire a nuclear power plant were reviewed in discussion held by the Agency team with the Iraqi counterpart. While not departing from the version contained in the "full, final and complete" report of May 1992, the Iraqi side added a few explanations.

25. As early as 1974, Iraq started approaching the international market for a nuclear power plant. Preliminary calls for bids on a natural uranium fueled NPP were sent to French and Canadian companies, but the response was negative. In the period

1976-1978, turnkey proposals for the supply of a LWR (PWR and BWR type) were requested of a number of West European and Japanese companies, which included the provision of enrichment technology and the reprocessing of spent fuel. Six offers were received by 1979, but a decision was postponed as a consequence of the accident at Three Mile Island. The concept of a turnkey contract was abandoned and replaced by studies on siting and evaluation of alternative power reactor designs with increased safety features. Contracts for preliminary qualification of different sites were signed with Finnish, Italian, Swiss and Soviet companies.

28. The French-supplied Tammuz 1 research reactor project started in 1976. Tammuz 1 was destroyed prior to its commissioning by the Israeli raid in June 1981 and Iraq was unable to replace it. Following the destruction of the Tammuz 1 reactor in 1981, a decision was taken to investigate the possibility to go underground with all planned nuclear facilities including the planned NPP project. Belgian, French, Finnish, Italian and Soviet companies were requested to make an assessment of this possibility. According to the Iraqi statement, these assessments did not yield encouraging results since the costs involved were "astronomical". In 1983, the idea of going underground to protect nuclear installations against hostile attacks, was allegedly abandoned. These statements have been, in fact, verified by the Agency from Member States' sources. It became apparent that locating facilities underground was for protecting more than for hiding since support facilities would have been on the surface. In the same time frame [1981-1983] for example, the Iraqi side had considered putting the Al Jazira feed material plant under 10 meters of concrete protection, but ended up building it conventionally for the reasons noted above.